PROPOSAL: Recognize Funds from U.S. EPA and Execute Contract for Demonstration of Advanced Maritime Emissions Control System for Ocean-Going Vessels

SYNOPSIS: The AQMD received a $1,500,000 award from the U.S. EPA under the Clean Diesel Emerging Technologies Program for diesel emission reduction demonstration projects. This action is to recognize these funds from U.S. EPA and execute a contract with Advanced Cleanup Technologies, Inc., to demonstrate an Advanced Maritime Emissions Control System on ocean-going vessels at a cost not to exceed $1,500,000 from the Advanced Technology, Outreach, and Education Fund.

COMMITTEE: Technology, September 23, 2011, Recommended for Approval

RECOMMENDED ACTIONS:

1. Recognize upon receipt $1,500,000 from the U.S. EPA into the Advanced Technology, Outreach, and Education (Fund 17) to cosponsor the demonstration of Advanced Maritime Emissions Control System (AMECS) on ocean-going vessels (OGVs); and

2. Authorize the Chairman to execute a contract with Advanced Cleanup Technologies, Inc., (ACTI) to cosponsor the demonstration of AMECS on OGVs in an amount not to exceed $1,500,000 from the Advanced Technology, Outreach, and Education Fund (Fund 17).

Barry R. Wallerstein, D.Env.
Executive Officer
Background
Auxiliary engines and boilers of OGVs are used at ports for power, lighting, ventilation, communication, and other on-board equipment during transit, maneuvering, hotelling, and cargo refrigeration. They are a significant source of PM, NOx, and SOx emissions at ports, particularly because most of these auxiliary units lack emission control devices and are fueled by high sulfur content liquid fuels. CARB estimates that over 10,000 OGV calls are made at California ports each year. In 2008, approximately 25 tons per day of NOx and 1.6 tons per day of diesel PM emissions were released into the air from auxiliary engines on vessels while docked.

AMECS has been tested to reduce PM, NOx, HC, and SOx emissions from auxiliary engines and boilers, but additional field demonstrations are still required to assess the durability and to optimize the capture and overall efficiencies of the system. AMECS consists of two major components, an Exhaust Capture System (ECS) and an Emission Treatment System (ETS). The ECS consists of a bonnet which is sized to fit over a wide variety of OGV stacks, a flexible duct, and a crane. The ETS consists of a particulate filter, SOx scrubber, and a Selective Catalytic Reduction (SCR) system. The ECS is designed to capture and transfer exhaust gases from auxiliary engines and boilers of OGVs to a dock-mounted ETS where the gases are treated to remove criteria pollutants and toxic contaminants.

In 2010, AQMD received a $1,500,000 grant award from the U.S. EPA’s Clean Diesel Emerging Technologies Program to demonstrate AMECS retrofit technology on OGVs at berth. The program limits the application of retrofit devices to only technologies listed on “U.S. EPA’s Emerging Technology List.” AQMD staff selected ACTI’s AMECS from the list in December 2009 because it is the only technology capable of reducing auxiliary engine and boiler emissions from OGVs at berth. The AMECS can reduce PM, SOx, NOx, HC, and CO by at least 70%, 80%, 70%, 70%, and 30%, respectively.

Proposal
The proposed project is to assess the reliability and effectiveness of AMECS to capture and treat hotelling emissions from OGVs at berth at the Port of Long Beach (POLB). The scope of the project includes enhancement of the ECS, and the demonstration of AMECS on several OGVs simultaneously during berth at POLB.

ACTI proposes to select an expert in vent and hood technology to assist in the enhancement of the ECS to connect up to four OGVs simultaneously and to improve the capture efficiency. AMECS will be connected through the ECS to the OGV exhaust stack while the participating vessels are docked. AMECS will be tested by an AQMD-approved independent company after 500 hours and 1,000 hours of treating hotelling...
emissions from OGV exhaust stacks to evaluate the performance, reliability, capture efficiency, and emission reduction potential of the AMECS.

This action is to recognize upon receipt $1,500,000 from the U.S. EPA into the Advanced Technology, Outreach, and Education Fund (Fund 17) and to execute a contract with ACTI, to demonstrate AMECS on OGVs in an amount not to exceed $1,500,000.

Benefits to AQMD
The proposed project is included in the Technology Advancement Office 2011 Plan Update under “Emission Control Technologies.” The proposed project supports the implementation of a near-term emission control technology that could potentially reduce NOx and PM emissions from auxiliary engines and boilers of OGVs at berth by more than 70%, and help AQMD to achieve its Clean Air goals.

Sole Source Justification
Section VII.B.2 of the Procurement Policy and Procedure identifies provisions by which a sole source award may be justified. This request for a sole source award is made under provisions B.2.d: Other circumstances exist which in the determination of the Executive Officer require such waiver in the best interest of the AQMD, B.2.c(3): the contractor has ownership of key assets required for project performance, and B.2.d(1): projects involving cost sharing by multiple sponsors. This sole-source award is also justified under federal regulations in that the federal awarding agency authorizes noncompetitive proposals. The U.S. EPA required a specified selection process, calling for AQMD to select a technology with the corresponding technology provider on the U.S. EPA’s Emerging Technology List. In addition, AMECS was selected among other retrofit technologies on the list because it is the only technology capable of reducing emissions from auxiliary engines and boilers of OGVs at berth.

ACTI designs and assembles aftertreatment technologies for reducing criteria and toxics emissions from auxiliary engines and boilers of OGVs at berth and from locomotives in railyards. In addition, ACTI has considerable experience with PM filters, scrubbers, and SCR technologies, and recently designed, assembled, installed, and demonstrated a pilot-scale AMECS on OGVs at POLB and an Advanced Locomotive Emission Control System on a locomotive at Union Pacific Railroad’s Roseville Yard. The proposed project is cost-shared by U.S. EPA and ACTI as shown in the following section.

Resource Impacts
U.S. EPA has awarded AQMD a $1,500,000 grant and ACTI will provide funding in the amount of $450,000 as shown below:
<table>
<thead>
<tr>
<th>Funding Partners</th>
<th>Funding Amount</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTI</td>
<td>$ 450,000</td>
<td>23%</td>
</tr>
<tr>
<td>AQMD Requested</td>
<td>$1,500,000</td>
<td>77%</td>
</tr>
<tr>
<td>Total</td>
<td>$1,950,000</td>
<td>100%</td>
</tr>
</tbody>
</table>

The $1,500,000 grant is funded under U.S. EPA’s Clean Diesel Emerging Technologies Program and will be administered from the Advanced Technology, Outreach, and Education Fund (Fund 17).